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US5737619: World wide web browsing with content delivery over an idle connection and interstitial content display

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Applicant(s): **none**
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Original: 395/761;
Field of Search: **395/761-762,774,335,346-347**
Legal Status:  [Show legal status actions](#)

Abstract: A computer program product and method of browsing the World Wide Web of the Internet using a client machine (e.g., a personal computer) supporting a graphical user interface and an Internet browser. The method locally stores, retrieves and outputs information objects to reduce the waiting time normally associated with the download of hypertext documents having high resolution graphics. In one embodiment, the method begins as a web page is being displayed on the graphical user interface, the web page having at least one link to a hypertext document preferably located at a remote server. In response to the user clicking on the link, the link is activated by the browser to thereby request downloading of the hypertext document from the remote server to the graphical user interface of the client. While the client waits for a reply and/or as the hypertext document is being downloaded, the browser displays a previously-cached information object.

Primary/Assistant
Examiners: **Fetting; Anton W.;**

Related Applications:

Application Number	AppDate	Patent	Issued	Title
US1995000543876	1995-10-19	US5572643	1996-11-05	Web browser with dynamic display of information objects during linking

Family:



Show 21 known family members

U.S. References:

Show the 53 patents that reference this one

Patent	Issued	Inventor(s)	Applicant(s)	Title
US4782463	11 /1988	Sanders et al.	International Business Machines Corp.	Method for generating display screens for a set of application programs by calling screen management subroutines
US4827508	5 /1989	Shear	Personal Library Software, Inc.	Database usage metering and protection system and method
US4833308	5 /1989	Humble	Advance Promotion Technologies, Inc.	Checkout counter product promotion system and method
US4953209	8 /1990	Ryder, Sr. et al.	International Business Machines Corp.	Self-verifying receipt and acceptance system for electronically delivered data objects
US5204947	4 /1993	Bernstein et al.	International Business Machines Corporation	Application independent (open) hypermedia enablement services
US5297249	3 /1994	Bernstein et al.	International Business Machines Corporation	Hypermedia link marker abstract and search services
US5355472	10 /1994	Lewis	International Business Machines Corporation	System for substituting tags for non-editable data sets in hypertext documents and updating web files containing links between data sets corresponding to changes made to the tags
US5359708	10 /1994	Bloomer et al.	International Business Machines Corp.	Dynamic in a document processing system for dynamically locating format controls and determining formatting information in effect before and after each

				<u>format control</u>
<u>US5367621</u>	11 /1994	Cohen et al.	International Business Machines Corporation	<u>Data processing method to provide a generalized link from a reference point in an on-line book to an arbitrary multimedia object which can be dynamically updated</u>
<u>US5367623</u>	11 /1994	Iwai et al.	Sharp Kabushiki Kaisha	<u>Information processing apparatus capable of opening two or more windows on screen, one window containing a page and other windows containing supplemental information</u>
<u>US5408659</u>	4 /1995	Cavendish et al.	International Business Machines Corporation	<u>Link pane class and application framework</u>
<u>US5412772</u>	5 /1995	Monson	Novell, Inc.	<u>System for permitting a view of an object or a user interface to be exchanged between operating system environments</u>
<u>US5428529</u>	6 /1995	Hartrick et al.	International Business Machines Corporation	<u>Structured document tags invoking specialized functions</u>
<u>US5438508</u>	8 /1995	Wyman	Digital Equipment Corporation	<u>License document interchange format for license management system</u>
<u>US5442771</u>	8 /1995	Filepp et al.	Prodigy Services Company	<u>Method for storing data in an interactive computer network</u>
<u>US5461667</u>	10 /1995	Remillard	Viscorp	<u>Apparatus and method for electronic device for information services</u>
<u>US5491820</u>	2 /1996	Belove et al.	AT&T Corporation	<u>Distributed, intermittently connected, object-oriented database and management system</u>
<u>US5511160</u>	4 /1996	Robson	Hewlett-Packard Company	<u>Information retrieval device for displaying and directly refreshing the display of a document</u>
<u>US5515490</u>	5 /1996	Buchanan et al.	Xerox Corporation	<u>Method and system for temporally formatting data presentation in time-dependent documents</u>

<u>US5530754</u>	6 /1996	Garfinkle		<u>Video on demand</u>
<u>US5617565</u>	4 /1997	Augenbraun et al.	Hitachi America, Ltd.	<u>Broadcast interactive multimedia system</u>
<u>US5623589</u>	4 /1997	Needham et al.	Intel Corporation	<u>Method and apparatus for incrementally browsing levels of stories</u>
<u>US5623656</u>	4 /1997	Lyons	Lucent Technologies Inc.	<u>Script-based data communication system and method utilizing state memory</u>
<u>US5630139</u>	5 /1997	Ozaki	NEC Corporation	<u>Program download type information processor</u>

First Claim: [Show all 13 claims](#)

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is set forth in the following claims:

1. A method of browsing in a computer network including a plurality of servers using a client machine having a browser, comprising the steps of:

- in response to a client request that establishes a live connection between the client machine and a server in a computer network, downloading and initiating the display of at least a portion of a first hypertext document on an interface of the client machine, the first hypertext document having a clickable graphic identifying second hypertext document;
- as the portion of the first hypertext document is being displayed on the interface and while the live connection is idle, downloading an information object to the client machine as a background process;
- storing but not displaying the information object in the client machine as the user browses the first hypertext document and before the user takes a predetermined action with respect to the clickable graphic to initiate downloading of the second hypertext document; and
- in response to the user taking the predetermined action with respect to the clickable graphic, retrieving the information object from storage in the client machine and displaying the information object on the interface to provide information to a user of the client machine as the browser links from the first hypertext document to a second hypertext document.

This application is a continuation-in-part of prior application Ser. No. 08/543,876, filed Oct. 19, 1995, now U.S. Pat. No. 5,572,643.

Background/Summary:

TECHNICAL FIELD

This invention relates generally to computer networks and more particularly to methods for enhancing the operation of a client browser operating in a multi-server computer environment.

BACKGROUND OF THE INVENTION

The worldwide network of computers commonly known as the "Internet" has seen explosive growth in the last several years. Mainly, this growth has been fueled by the introduction and widespread use of so-called "web" browsers, which allow for simple graphical user interface (GUI)-based access to network servers, which support documents formatted as so-called "web pages". The "World Wide Web" (WWW) is that collection of servers of the Internet that utilize the Hypertext Transfer Protocol (HTTP). HTTP is a known application protocol that provides users access to files (which can be in different formats such as text, graphics, images, sound, video, etc.) using a standard page description language known as Hypertext Markup Language (HTML). HTML provides basic document formatting and allows the developer to specify "links" to other servers and files. Use of an HTML-compliant client browser involves specification of a link via a Uniform Resource Locator or "URL". Upon such specification, the client makes a tcp/ip request to the server identified in the link and receives a "web page" (namely, a document formatted according to HTML) in return.

There is a finite time period between the time the user initiates the link and the return of the web page. Even when the web page is returned quickly, there is an additional time period during which formatting information must be processed for display on the display interface. For example, most web browsers display in-line images (namely images next to text) using an X bit map (XBM) or .gif format. Each image takes time to process and slows down the initial display of the document. The user typically "sees" an essentially unrecognizable "image" on the display screen which only gradually comes into focus. It is only after the entire image is downloaded from the server and then processed by the browser that the user can fully access the web page itself. This "waiting" period is even longer when the client machine has a relatively slow modem, and often the user will have to wait many seconds before being able to see the in-line image and/or begin using the web page. This problem will be exacerbated when the next generation browser technology (such as Netscape Navigator 2.0) becomes more widely implemented because such browsers are being designed to handle much more complex download formats (for more interactive, dynamic displays).

BRIEF SUMMARY OF THE INVENTION

It is thus a primary object of the invention to enhance the operation of a web browser by causing the display of some useful information to the user during the period of user "downtime" that otherwise occurs between linking and downloading of a hypertext document identified by the link. Such information may include, without limitation, advertisements, messages, fill-in forms, notices from a service provider, notices from another Internet service (such as receipt of an e-mail message), or some third party notice.

It is another more particular object of the invention to use an Hypertext Markup Language comment (e.g., via an HTML comment tag) in a web page to store an information object related to a link and then formatting and displaying such information when the link is activated.

It is still another object of the invention to embed an information object within an existing web page so that the object is masked until a link to another web page is activated. Upon activation, the object is displayed to the user effectively as a "mini" web page while the browser calls the link and awaits for a reply and download.

For example, in one particular embodiment, the information object

For example, in one particular embodiment, the information object includes copyright management information for a hypertext document associated with a link in a currently-displayed page. Such information may include the name or other identifying information of a copyright owner, terms and conditions for uses of the work within the hypertext document, and such other information as may be prescribed or desired. When the user "hits" the link in the current page, the copyright management information (which is already present in the browser) is displayed as the new document is being accessed and downloaded. The copyright management information, for example, may inform the user of the terms and conditions of how the copyrighted content being downloaded can then be reused. The "time" period normally associated with the download is thus productive for both the user (since he or she no longer has to sit and wait for the display) as well as to the content provider.

According to the preferred embodiment, there is described a method of browsing the World Wide Web of the Internet using an HTML-compliant client supporting a graphical user interface and a browser. The method begins as a web page is being displayed on the graphical user interface, the web page having at least one link to a hypertext document preferably located at a remote server. In response to the user clicking on the link, the link is activated by the browser to thereby request downloading of the hypertext document from the remote server to the graphical user interface of the client. While the client waits for a reply and/or as the hypertext document is being downloaded, the browser displays one or more different types of informational messages to the user. Such messages include, without limitation, advertisements, notices, messages, fill-in forms, copyright information and the like. Preferably, the message information is in some way related to the hypertext document being accessed and downloaded, as in the case of copyright management information perhaps warning the user that the material being downloaded is subject to certain use restrictions of the copyright owner. Where the displayed information is related to the link, it is desirable that such information be embedded within the web page from which the link is launched. The information is preferably "hidden" within the web page using a hypertext markup comment tag.

The invention is preferably implemented in a computer having a processor, an operating system, a graphical user interface and a HTTP-compliant browser. In such case, the novel and advantageous features of the invention are achieved using a first means, responsive to activation of a link from a web page, for retrieving an information object masked within the web page, and a second means for displaying information from the information object on the graphical user interface as the browser establishes the link. Preferably, the information object is masked by an HTML comment tag, which may include other HTML tags nested therein to format the information in the object. This enables the support of complex "mini" web pages that are displayed and accessible to the viewer during otherwise non-productive periods when the browser is busy processing links to other documents or web sites.

Drawing Descriptions:	Show drawing descriptions
Description of Preferred Embodiments:	Show description of preferred embodiments
Foreign References:	none

(No patents reference this one)

Other Abstract Info: DERABS G97-245286

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